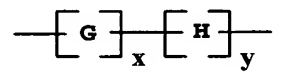
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (currently amended): A microarray comprising a support having attached to a surface thereof at least one porous layer, wherein said porous layer comprises a hydrophilic binder and water-insoluble polymer particles, wherein said water-insoluble polymer particles comprise monodisperse polymer particles having a particle size distribution, wherein the coefficient of variation of said particle size distribution is less than 20% and wherein said water-insoluble polymer particles have a mean diameter of from 0.05 to 50 microns, wherein said water-insoluble polymer particles comprise chemically active groups on water-soluble stabilizer polymers which are covalently grafted, chemisorbed, or physically adsorbed to the surface of said water-insoluble polymer particles, wherein said water-soluble stabilizer polymers comprise pendant vinylsulfonyl or latent vinylsulfonyl groups and wherein said water-soluble stabilizer polymers are represented by Formula I:



Formula I

wherein

"G" represents a polymerized α,β-ethylenically unsaturated addition polymerizeable monomer;

"H" represents a vinylsulfone or vinylsulfone precursor unit monomer; and

x and y both represent molar percentages ranging from 10 to 90 and 90 to 10, and further comprising a bioaffinity tag bound to ~~said hydrophilic binder of~~ said at least one porous layer in a spatially addressable manner.

2 (original): The microarray of Claim 1 wherein said polymer particles comprise one or more polymers.

3 (original): The microarray of Claim 1 wherein said polymer particles comprise water insoluble synthetic polymers.

4 (original): The microarray of Claim 3 wherein said water insoluble synthetic polymers comprise at least one member selected from the group consisting of addition polymers, poly (alkylene oxides), phenol-formaldehyde polymers, urea-formaldehyde polymers and condensation polymers consisting of one or more of the following repetitive units: esters, amides, imides, carbonates, urethanes, and ethers.

5 (canceled):

6 (canceled):

7 (previously presented): The microarray of Claim 1 wherein said monodisperse polymer particles have a particle size distribution, wherein the coefficient of said particle size distribution is less than 10%.

8 (canceled):

9 (previously presented): The microarray of Claim 1 wherein said chemically active groups are present on the surface of said polymer particles.

10 (previously presented): The microarray of Claim 1 wherein said chemically active groups comprise at least one member selected from the group consisting of thiols, primary amines, secondary amines, tertiary amines, quaternary ammoniums, phosphines, alcohols, carboxylic acids, primary or secondary amines, vinylsuflonyls, aldehydes, epoxies, hydrazides, succinimidyl esters, carbodiimides, maleimides, iodoacetyls, isocyanates, isothiocyanates, aziridines, or sulfonates.

11 (previously presented): The microarray of Claim 1 wherein said chemically active groups comprise at least one member selected from the groups consisting of primary amines, secondary amines, or carboxylic acids.

12 (previously presented): The microarray of Claim 1 wherein said chemically active groups comprise vinylsulfonyl units.

13 (canceled):

14 (previously presented): The microarray of Claim 1 wherein said stabilizer polymers comprise at least one member selected from the groups consisting of poly(propyleneimine), polymers and copolymers of methacrylic acid, acrylic acid, mercaptomethyl styrene, N-aminopropyl (meth)acrylamide and secondary amine derivatives thereof, N-aminoethyl (meth)acrylate and secondary amine forms thereof, diallyamine, vinylbenzylamine, vinylamine, (meth)acrylic acid, vinylbenzyl mercaptan, and hydroxyethyl(meth)acrylate.

15 (previously presented): The microarray of Claim 1 wherein said stabilizer polymers comprise at least one member selected from the groups consisting of poly(vinylamine), poly(propyleneimine), polyethyleneimine, polyacrylic acid, polymethacrylic acid, or poly(N-aminopropyl methacrylamide).

16 (canceled):

17 (canceled):

18 (currently amended): The microarray of Claim 17 wherein x and y range from 25 to 75 and 75 to 25 respectively.

19 (currently amended): The microarray of Claim 17 wherein G represents nonionic or ionic monomers.

20 (original): The microarray of Claim 19 wherein said ionic monomers comprise at least one member selected from the group consisting of 2-phosphatoethyl acrylate potassium salt, 3-phosphatopropyl methacrylate ammonium salt, acrylamide, methacrylamides, maleic acid and salts thereof, sulfopropyl acrylate and methacrylate, acrylic and methacrylic acids and salts thereof, N-vinylpyrrolidone, acrylic and methacrylic esters of alkylphosphonates,

styrenics, acrylic and methacrylic monomers containing amine ammonium functionalities, styrenesulfonic acid and salts thereof, acrylic and methacrylic esters of alkylsulfonates, vinylsulfonic acid and salts thereof.

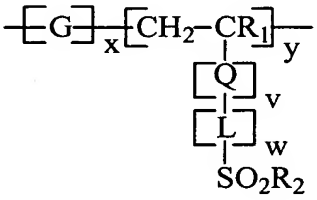
21 (original): The microarray of Claim 19 wherein said nonionic monomers comprise at least one member selected from the group consisting of poly(ethylene oxide) segments, carbohydrates, amines, amides, alcohols, polyols, nitrogen-containing heterocycles, and oligopeptides.

22 (original): The microarray of Claim 19 wherein said nonionic monomers comprise at least one member selected from the group consisting of poly(ethylene oxide) acrylate and methacrylate esters, vinylpyridines, hydroxyethyl acrylate, glycerol acrylate and methacrylate esters, (meth)acrylamide, and N-vinylpyrrolidone.

23 (currently amended): The microarray of Claim 17 wherein G represents the polymerized form of acrylamide, sodium 2-acrylamido-2-methanepropionate, sulfopropyl acrylate and methacrylate salts, or sodium styrenesulfonate.

24 (currently amended): The microarray of Claim 17 wherein H represents the polymerized form of a vinylsulfone or vinylsulfone precursor unit.

25 (currently amended): The microarray of Claim 17 wherein said "H" represents groups represented by Formula II:



Formula II

wherein:

R_1 is a hydrogen atom or a C_1-C_6 alkyl group. Preferably R_1 is a hydrogen atom.

Q is $-CO_2-$, or $CONR_1$.;

v is 1 or 0;

w is 1-3;

L is a divalent linking group containing at least one linkage selected from the group consisting of $-CO_2-$ and $-CONR_1$, and containing 3-15 carbon atoms, or a divalent atom containing at least one linkage selected from the group consisting of –O-, $-N(R_1)-$, -CO-, -SO-, $-SO_2-$, $-SO_3-$, $-SO_2N(R_1)-$, $-N(R_1)CON(R_1)-$ and $-N(R_1)CO_2-$, and containing 1-12 carbon atoms in which R_1 has the same meaning as defined above;

R_2 is -CH=CH2 or –CH2-CH2X_1 wherein X_1 is a substituent replaceable by a nucleophilic group or releasable in the form of HX_1 by a base.

26 (original): The microarray of Claim 25 wherein X_1 represents $-S_2O_3^-$, $-SO_4^-$, -Cl, -Br, -I, quaternary ammonium, pyridinium, and –CN, and sulfonate esters.

27 (original): The microarray of Claim 1 wherein said polymer particles comprise at least one ethylenically unsaturated polymerizable monomer.

28 (previously presented): The microarray of Claim 27 wherein said at least one ethylenically unsaturated polymerizable monomer comprises at least one member selected from the group consisting of methacrylic acid esters, acrylate esters, vinyl halides and vinylidene halides, N-alkylated acrylamides and methacrylamides, vinyl esters, vinyl ether, allyl alcohol and its ethers and esters, and unsaturated ketones and aldehydes.

29 (original): The microarray of Claim 27 wherein said at least one ethylenically unsaturated polymerizable monomer comprises chemical functionalities.

30 (original): The microarray of Claim 29 wherein said chemical functionalities comprise at least one member selected from the group consisting of vinyl groups, acrylates, methacrylates, vinyl ethers and vinyl esters.

31 (original): The microarray of Claim 27 wherein said at least one ethylenically unsaturated polymerizable monomer comprises trimethylolpropane triacrylate, ethylene glycol dimethacrylate, isomers of divinylbenzene, and ethylene glycol divinyl ether.

32 (original): The microarray of Claim 27 further comprising one or more water-soluble ethylenically unsaturated monomers, wherein said one or more water-soluble ethylenically unsaturated monomers comprises less than 20% of the total weight of said polymer particles.

33 (previously presented): The microarray of Claim 32 wherein said one or more water-soluble ethylenically unsaturated monomers comprise at least one member selected from the groups consisting of styrenics, acrylates, and methacrylates substituted with highly polar groups, unsaturated carbon and heteroatom acids and their salts, vinylcarbazole, vinylimidazole, vinylpyrrolidone, and vinylpyridines.

34 (canceled):

35 (original): The microarray of Claim 1 wherein said polymer particles have a mean diameter of from 0.50 to 5 microns.

36 (original): The microarray of Claim 1 wherein said hydrophilic binder comprises at least one member selected from the groups consisting of gelatin, modified gelatin, water-soluble cellulose ethers, poly(n-isopropylacrylamide), polyvinylpyrrolidone and vinylpyrrolidone-containing copolymers, polyethyloxazoline and oxazoline-containing copolymers, imidazole-containing polymers, polyacrylamides and acrylamide-containing copolymers, poly(vinyl alcohol) and vinyl-alcohol-containing copolymers, poly(vinyl methyl ether), poly(vinyl ethyl ether), poly(ethylene oxide), acacia, alginic acid, bentonite, carbomer, carboxymethylcellulose sodium, cetostearyl alcohol, colloidal silicon dioxide, ethylcellulose, guar gum, hydroxyethylcellulose, hydroxypropyl cellulose, hydroxypropyl methylcellulose, magnesium aluminum silicate, maltodextrin, methylcellulose, povidone, propylene glycol alginate,

sodium alginate, sodium starch glycolate, starch, tragacanth, xanthum gum, and mixtures thereof.

37 (original): The microarray of claim 1 wherein said hydrophilic binder comprises gelatin.

38 (original): The microarray of Claim 37 wherein said gelatin comprises alkali pretreated gelatin.

39 (original): The microarray of claim 1 wherein said hydrophilic binder comprises chemically active groups rich in specific functionalities.

40 (original): The microarray of Claim 39 wherein said specific functionalities comprise at least one member selected from the group consisting of thiols, primary amines, secondary amines, tertiary amines, phosphines, alcohols, carboxylic acids, vinylsulfonyls, aldehydes, epoxies, hydrazides, succinimidyl esters, carbodiimides, maleimides, iodoacetyls, isocyanates, isothiocyanates, or aziridines.

41 (original): The microarray of Claim 39 wherein said specific functionalities comprise at least one member selected from the group consisting of primary or secondary amines or a vinylsulfonyl group.

42 (previously presented): The microarray of Claim 39 wherein said hydrophilic binder comprises at least one member selected from the group consisting of poly(propyleneimine), polymers and copolymers of N-aminopropyl (meth)acrylamide and secondary amine derivatives thereof, N-aminoethyl (meth)acrylate and secondary amine forms thereof, diallyamine, vinylbenzylamine, vinylamine, (meth)acrylic acid, vinylbenzyl mercaptan, and hydroxyethyl(meth)acrylate.

43 (canceled):

44 (canceled):

45 (previously presented): The microarray of claim 1wherein said bioaffinity tag is bound to said polymer particle of said at least one porous layer.

46 (previously presented): The microarray of claim 1wherein said bioaffinity tag is bound to said stabilizer polymer.

47 (previously presented): The microarray of claim 1 wherein said bioaffinity tag comprises at least one member selected from the group consisting of DNA, antibodies, antigens, proteins, enzymes, nucleic ligands, and polysaccharides.

48 (original): The microarray of claim 1 wherein said at least one porous layer comprises from 0.25 to 250 microns in thickness.

49 (original): The microarray of claim 1 wherein said at least one layer comprises more than a single layer to produce a three-dimensional array.

50 (original): The microarray of Claim 1 wherein said porous layer may also include crosslinking agents.

51 (original): The microarray of claim 1 wherein said support comprises glass.

52 (original): The microarray of Claim 1 wherein said support comprises at least one member selected from the group consisting of glass, fused silica, plastics, metals, papers and semiconductors.

53 (original): The microarray of Claim 1 further comprising an under-coating or subbing layer between said porous layer and said support.

54 (withdrawn, previously presented): A method of using a microarray comprising:

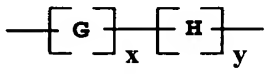
providing a microarray comprising a support having attached to a surface thereof at least one porous layer, wherein said porous layer comprises a hydrophilic binder and polymer particles, wherein said polymer particles comprise monodisperse polymer particles having a particle size distribution, wherein the coefficient of variation of said particle size distribution is less than 20% and wherein said polymer particles have a mean diameter of from 0.05 to 50 microns;

contacting said microarray with biological targets labeled with optical emission tag; and

measuring the signals from said optical emission tag.

55 (previously presented) The microarray of Claim 27 wherein said at least one ethylenically unsaturated polymerizable monomer comprises a styrenic, an acrylic ester or a methacrylic ester.

56 (new) A microarray comprising a support having attached to a surface thereof at least one porous layer, wherein said porous layer comprises a hydrophilic binder and polymer particles, wherein said polymer particles comprise monodisperse polymer particles having a particle size distribution, wherein the coefficient of variation of said particle size distribution is less than 20% and wherein said polymer particles have a mean diameter of from 0.05 to 50 microns, wherein said polymer particles comprise chemically active groups on stabilizer polymers which are covalently grafted, chemisorbed, or physically adsorbed to the surface of said polymer particles, wherein said stabilizer polymers comprise pendant vinylsulfonyl or latent vinylsulfonyl groups and wherein said stabilizer polymers are represented by Formula I:



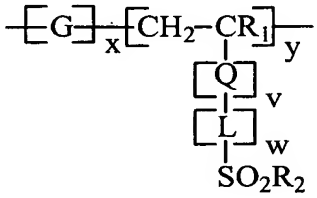
Formula I

wherein

x and y both represent molar percentages ranging from 10 to 90 and 90 to 10;

"G" represents a polymerized α,β-ethylenically unsaturated addition polymerizeable monomer;

"H" represents a vinylsulfone or vinylsulfone precursor unit monomer wherein said "H" represents groups represented by Formula II:



Formula II

wherein:

R_1 is a hydrogen atom or a C_1-C_6 alkyl group. Preferably R_1 is a hydrogen atom.

Q is $-CO_2-$, or $CONR_1$.;

v is 1 or 0;

w is 1-3;

L is a divalent linking group containing at least one linkage selected from the group consisting of $-CO_2-$ and $-CONR_1$, and containing 3-15 carbon atoms, or a divalent atom containing at least one linkage selected from the group consisting of –O-, $-N(R_1)-$, -CO-, -SO-, $-SO_2-$, $-SO_3-$, $-SO_2N(R_1)-$, $-N(R_1)CON(R_1)-$ and $-N(R_1)CO_2-$, and containing 1-12 carbon atoms in which R_1 has the same meaning as defined above;

R_2 is -CH=CH2 or –CH2-CH2X_1 wherein X_1 is a substituent replaceable by a nucleophilic group or releasable in the form of HX_1 by a base. ; and

further comprising a bioaffinity tag bound to said at least one porous layer in a spatially addressable manner.

57 (new) The microarray of claim 1 wherein said bioaffinity tag is bound to said hydrophilic binder of said at least one porous layer.